SBEE Cables (INDIA) Limited, Unit – 2, Harohalli,	QUALITY ASSURANCE DEPARTMENT FORMAT	DOC. No. : F/QLT/H - 03 REV. No. : 00 DATE : 09.09.2018 PAGE : 1 of 1

PACKING LIST

Customer : KUMAR ELECTRICALS					Date:- 17.05.2022
P.O.No.: 017:2022-23					

Sr. No.	Description	Drum No.	Offered Qty. (Mtr)	Consumed Qty. (Mtr)	Actual Qty. (Mtrs)
1	3.5C X25 Sqmm; (A2XFY)	22/H/122	1000x4, 920x1	0	1096
2		22/H/123		0	958
3		22/H/124		0	1024
4		22/H/125		0	986
5		22/H/126		0	927
		Total	4920		4991
1	4C X16 Sqmm; (A2XFY)	22/H/63	1000x1, 700x1	0	1011
2		22/H/127		0	700
		Total	1700	0	1711

Tested by

Mr. Anil Kumar
Sr. Engineer - QA & QC
SBEE Cables (INDIA) Ltd.

SBEE CABLES (INDIA) LIMITED HAROHALLI

SBEE Cables (India) Limited Unit-2 Harohalli	Quality Department - Final Testing Routine Tests Test Report (As Per - IS 7098 Part-1)	Doc No : F/FT/H-07 Rev No. : 01 Date : 10.06.2020 Page : 01 of 01

Customer : KUMAR ELECTRICALS

P.O.No.: 017:2022-23

Date of Testing.:08.05.2022

Sr. No.	Description	Drum No.	Length (Mtrs)	High Voltage Test (3 KV for 5 Minutes For Each Connection)	Conductor Resistance Ohms/km (Max)	
					Specified (Max)	Observed (Max)
1	3.5 Core X 25 Sq.mm. A2XFY	22/H/122	1096	Withstood	1.20 (Phase) 1.91 (Neutral)	1.13 1.79
2		22/H/123	958	Withstood	1.20 (Phase) 1.91 (Neutral)	1.15 1.81
3		22/H/124	1024	Withstood	1.20 (Phase) 1.91 (Neutral)	1.16 1.82
4		22/H/125	986	Withstood	1.20 (Phase) 1.91 (Neutral)	1.15 1.78
5		22/H/126	927	Withstood	1.20 (Phase) 1.91 (Neutral)	1.14 1.79
6	4 Core X 16 Sq.mm. 2XFY	22/H/63	1011	Withstood	1.91	1.78
7		22/H/127	700	Withstood	1.91	1.79

Tested by

Mr. Amey Karnik
Engineer- QA & QC
SBEE CABLES (INDIA) LTD.

SBEE CABLES (INDIA) LIMITED HAROHALLI

Approved by

Mr. Anil Kumar
Sr.Engineer- QA & QC
SBEE CABLES (INDIA) LTD.

SBEE Cables (India) Limited Unit-2, Harohalli	Quality Department - Final Testing Test Report JST Type Tests - IS: 7098 Part-1	Doc. No F/FT/H-08 Rev No 01 Date 10.05.2020 Page 01 of 02

Test Report

Customer : KUMAR ELECTRICALS — Date - 12.05.2022

P.O.No.: 017 2023-23

Description: 3.5 Core X 25 Sq mm Stranded (Shaped) Aluminium Conductor, Insulation Type - XLPE (Cross linked polyethylene) Insulated,

PVC Type ST2 Inner Sheathed, G I Strip Armoured and Overall PVC ST2 Outer Sheathed Armoured Power Cable Voltage Grade 1100 Volts

Cable Code:- A2XFY

				Drum No.	22/H/123			
				Length (Mtrs)	958			
Sr.No.	Description	Units	Specified Value	Observed Value				
1	**Conductor (8130)**							
	a) No. of strands (Phase & Neutral Conductor)	Nos	7 & 7	7	7	7	7	
	b) Strand Diameter (before stranding) Phase & Neutral	mm	2.14 & 1.71 ± 0.015	2.14 to 2.15	2.14 to 2.15	2.14 to 2.15	1.71 to 1.72	
	c) Tensile Test (before stranding) Phase & Neutral	N/mm^2	100 (Min)	112	116	118	111	
	d) Wrapping Test (before stranding) Phase & Neutral		Should not be break	Passed	Passed	Passed	Passed	
	e) Conductor resistance at 20^{0}C (Phase & Neutral)	Ω/km	1.20 & 1.91 (Max)	1.14	1.15	1.14	1.83	
2	**Test on XLPE Insulation (IS- 7098-1)**							
	a) Type of Insulation		XLPE	XLPE				
	b) Colour of Insulation			Red	Yellow	Blue	Black	
	c) Thickness of Insulation & (Phase & Neutral)	mm	0.9 & 0.7 (Nom)	0.98	0.99	0.97	0.79	
	d) Volume Resistivity at							
	27^{0}C	Ohm-Cm	1 X 10^{14} (Min)	6.2 X 10^{14}	7.4 X 10^{14}	6.4 X 10^{14}	6.3 X 10^{14}	
	90^{0}C	Ohm-Cm	1 X 10^{12} (Min)	5.4 X 10^{12}	6.1 X 10^{12}	5.5 X 10^{12}	5.6 X 10^{12}	
	e) High voltage (water immerssion test) 60^{0}C							
	a) A C test (after 24 hrs)	3kv (rms) raised to 6kv (rms) for 5minutes		Withstood				
	b) D C test	1.2kv DC for 240hrs		Withstood				
	a) Without ageing							
	Tensile Strength	N/mm2	12.5 (Min)	17.58				
	Elongation	%	200 (Min)	456				
	b) After ageing in Air Oven							
	Tensile Strength	N/mm2	12.5 (Min)	16.95				
	Variation	%	±25 (Max)	3.58				
	Elongation	%	200 (Min)	435				
	Variation	%	±25 (Max)	4.61				
	c) Water absorption test (gravemetric Method)	mg/cm^2	1.0 (Max)	0.321				
	d) Shrinkage Test	%	4.0 (Max)	1.50	1.50	1.25	1.25	
	e) Hot Set test							
	Elongation under load	%	175 (Max)	44	45	45	48	
	Permanent elongation	%	15 (Max)	0.70	0.72	0.65	0.65	
3	**Test on PVC Inner Sheath (IS-5831)**							
	a) Type of Sheath		Type- ST2 PVC	Type- ST2 PVC				
	b) Thickness of inner sheath	mm	0.4 (Min)	0.48				
	c) Colour of Inner Sheath		Black	Black				
4	**Test on armour wires/Strip (IS-3975)**							
	a) Dimensions (strip/wire)	mm	4 X 0.80 ± 10%	3.84 - 3.96 X 0.78 - 0.80				
	b) Tensile strength	N/mm2	250 - 560	425				
	c) Elongation	%	6 (Min)	9.85				
	d) winding test on strips	No visible cracks and particles detatch by rubbing with bare finger		Passed				
	e) Mass of Zn coating	gr/m2	104.5 (Min)	125				
	f) uniformity of Zn coating (Dip test)	No of dips	1x1/2 minutes	Passed				
	g) Resistivity	Ohm cm	14.5 X 10^{-6} (Max)	13.45 X 10^{-6}				
	h) Adhesion test	The zinc coating shall not crack		Passed				
	i) Armour Coverage	%	90 (Min)	95.8				
	j) Direction of lay of armouring		Left hand (LH)	Left hand (LH)				

			Drum No.	22/H/123
5	**Test on PVC Outer Sheath (IS-5831)**		**Size of Cable**	**3.5Core X 25 Sq.mm**
	a) Type of Sheath		ST 2 PVC	ST2 PVC
	b) Thickness of outer sheath	mm	1.4 (Min)	1.52
	c) Overall Diameter	mm	-	22.85
	d) Colour of Sheath		Black	Black
	a) Without ageing			
	Tensile Strength	N/mm2	12.5 (Min)	16.25
	Elongation	%	150 (Min)	245
	b) After ageing in Air Oven			
	Tensile Strength	N/mm2	12.5 (Min)	16.9
	Variation	%	±25 (Max)	-4.00
	Elongation	%	150 (Min)	234
	Variation	%	±25 (Max)	4.49
	c) Loss of Mass	mg/cm2	2.0 (Max)	0.524
	d) Hot deformation (Depth of indentation)	%	50 (Max)	24
	e) Heat shock test		No sign of cracks	No sign of cracks
	f) Shrinkage Test	%	4.0 (Max)	1.85
	g) Thermal Stability	Minutes	60 (Min)	168
	h) Cold bend/ cold impact test		No sign of cracks	No sign of cracks
6	**Flammability Test**			
	Length of uncharred portion from botton edge of the top clamp (IEC 332 Part-1, Category-B)	mm	50 (Min)	401
	Period of burning after removal of flame	Second	60 (Max)	3
7	Surface Finish & Length Measurement			Verified & found ok
8	Sequential length meter Marking		Visual	Every one meter
9	**High Voltage test at room temp.**	3kV (rms) for 5 minutes for each connection		Withstood

Tested by

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SBEE Cables (India) Limited Unit-2 Harohalli	Quality Department - Final Testing Test Report Type Tests - IS: 7098 Part-1	Doc. No : F/FT/H-08 Rev No. : 01 Date : 10.06.2020 Page : 01 of 02

Test Report

Customer : KUMAR ELECTRICALS — Date:- 10.05.2022

P.O.No.: 017:2022-23

Description: 4 Core X 16 Sq.mm, Stranded (Shaped) Aluminium (Class 2) Conductor, Type - XLPE (Cross linked polyethylene) Insulated, PVC Type ST2 Inner Sheathed, Galvanized Steel Strip Armoured and Overall PVC Type ST2 Sheathed Armoured LT Power Cable.

Cable Code:- A2XFY

			Drum No	22/H/63			
			Length (Mtrs)	1011			
Sr.No.	**Description**	**Units**	**Specified Value**	**Observed Value**			
	Cable Type			A2XFY			
	Size & Type of Cable	Sq mm		4 Core X 16 Sq mm			
	Standard Applicable		IS: 7098 (part-1), IS: 8130, IS: 5831, IS: 3975				
	Voltage Rating	rms		1100 Volts			
1	**Conductor (IS: 8130)**						
	a) No. of strands (Phase & Neutral)	Nos	7	7	7	7	7
	b) Strand Diameter (before stranding) Phase & Neutral	mm	1.71 ±0.015	1.71-1.72	1.72-1.72	1.71-1.72	1.71-1.72
	c) Tensile Test (before stranding) Phase & Neutral	N/mm^2	100 (Min)	152	155	152	153
	d) Wrapping Test (before stranding) Phase & Neutral		should not be break	Passed	Passed	Passed	Passed
	e) Conductor resistance at 20°C (Phase & Neutral)	ohms/km	1.91 (Max)	1.82	1.83	1.82	1.81
2	**Test on Insulation (IS: 7098 part 1)**						
	a) Type of Insulation		Type- XLPE	Type XLPE (Cross linked Polyethyene)			
	b) Colour of Insulation			Red	Yellow	Blue	Black
	c) Thickness of Insulation (Phase & Neutral)	mm	0.7 (Nom)	0.84	0.82	0.83	0.81
	d) Volume Resistivity at						
	27°C	Ohm-Cm	1 X 10^{14} (Min)	5.6 X 10^{15}	5.2 X 10^{16}	5.4 X 10^{15}	5.8 X 10^{15}
	90°C	Ohm-Cm	1 X 10^{12} (Min)	5.8 X 10^{13}	5.7 X 10^{14}	5.3 X 10^{14}	5.4 X 10^{14}
3	**Physical tests on Insulation (IS: 7098 part 1)**						
	a) Without ageing						
	Tensile Strength	N/mm2	12.5 (Min)	18.82			
	Elongation	%	200 (Min)	470			
	b) After ageing in Air Oven						
	Tensile Strength	N/mm2	12.5 (Min)	17.55			
	Variation	%	±25 (Max)	6.75			
	Elongation	%	200 (Min)	444			
	Variation	%	±25 (Max)	5.53			
	c) Water absorption test (gravemetric Method)	mg/cm^2	1.0 (Max)	0.345			
	d) Shrinkage Test	%	4.0 (Max)	1.45	1.55	1.65	1.75
	e) Hot Set test						
	Elongation under load	%	175 (Max)	47	45	48	44
	Permanent elongation	%	15 (Max)	0.80	0.70	0.85	0.75
4	**Test on Inner Sheath (IS: 5831)**						
	a) Type of Sheath		Type ST2 PVC	Type ST2 PVC			
	b) Thickness of inner sheath	mm	0.3 (Min)	0.44			
	c) Colour of Inner Sheath		Black	Black			

			Cable Size	4 C X 16 Sq mm
5	**Test on armour wires (IS-3975)**			
	a) Dimensions (strip/wire)	mm	4 X 0.80 ± 10%	3.92 - 4.02 X 0.79 - 0.805
	b) Tensile strength	N/mm2	250 - 580	395.45 - 455.50
	c) Elongation	%	6 (Min)	15
	d) Winding test on strips	No visible cracks and particles detatch by rubbing with bare finger		Passed
	e) Mass of Zn coating	gr/m2	104.5 (Min)	133
	f) Uniformity of Zn coating (Dip test)	No of dips	1x1/2 minutes	Passed
	g) Resistivity	Ohm cm	14.0 X 10^{-5} (Max)	13.62 X 10^{-5}
	h) Adhesion test	The zinc coating shall not crack		Passed
	i) Armour Coverage	%	90 (Min)	>90
	j) Direction of lay of armouring	-	Left hand (LH)	Left hand (LH)
6	**Tests on Outer Sheath (IS: 5831)**			
	a) Type of Sheath		**Type ST2 PVC**	**Type ST2 PVC**
	b) Thickness of outer sheath	mm	1.40 (Min)	1.5
	c) Overall Diameter	mm	-	20.22
	d) Colour of Outer Sheath		**Black**	**Black**
7	**Physical Tests on Outer Sheath (IS: 5831)**			
	a) Without ageing			
	Tensile Strength	N/mm2	12.5 (Min)	16.2
	Elongation	%	150 (Min)	246
	b) After ageing in Air Oven			
	Tensile Strength	N/mm2	12.5 (Min)	16.33
	Variation	%	±25 (Max)	-0.80
	Elongation	%	150 (Min)	255
	Variation	%	±25 (Max)	-3.66
	c) Loss of Mass	mg/cm2	2.0 (Max)	0.2132
	d) Hot deformation (Depth of indentation)	%	50 (Max)	21.5
	e) Heat shock test		No sign of cracks	No sign of cracks
	f) Shrinkage Test	%	4.0 (Max)	1.25
	g) Thermal Stability	Minutes	100 (Min)	160
	h) Cold impact test		No sign of cracks	No sign of cracks
8	**Flammability Test**			
	i) Length of charred portion from botton edge of the top clamp (IEC 332 Part-1, Category-B)	mm	50 (Minimum)	395
	ii) Period of burning after removal of flame	Second	60 (Max)	3
9	Surface Finish & Length Measurement			Verified & found ok
10	Sequential length meter Marking		Visual	Every one meter
11	**High Voltage test at room temp.**	3kv (rms) for 5 minutes for each connection		Withstood

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